TEACHER'S GUIDE FOR DEVELOPMENT OF VISUAL LEARNING ABILITIES AND UTILIZATION OF LOW VISION

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The University of Texas at Austin

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PREFACE

The "Utilization of Low Vision Kit" containing a Visual Efficiency Scale and this Teacher's Guide has emerged as a result of the cooperative efforts of numerous individuals and organizations. The final scale contains some items from a measure developed by Dr. Natalie Barraga, The University of Texas at Austin as a part of some research completed at George Peabody College for Teachers in 1963. Other items in the scale were taken from a measure developed by Mrs. Ruth Holmes, Illinois Braille and Sight Saving School for research with older low vision children for her Master's thesis at Illinois State University in 1967. Evidence from the use of these scales provided information which led to the rearrangement of the original items, and the addition of new items for a more comprehensive assessment of visual functioning.

The completed revision, now known as the Visual Efficiency Scale, was accomplished largely by Mr. Douglas Ozias and Miss Mildred Smith, graduate students at The University of Texas in Austin, in consultation with Dr. Carson Nolan, American Printing House for the Blind. The bibliography and list of appropriate materials was the major effort of Mrs. Amie Dennison in the Instructional Materials Reference Center at the American Printing House for the Blind.

The impetus for the implementation of the project and

the dissemination of the kit on a national scale was provided by Dr. James Moss, Director, Division of Research, Bureau of the Handicapped, USOE and Miss Josephine Taylor, Unit Coordinator of Visually Handicapped, Division of Training Programs, Bureau of the Handicapped, USOE. Miss Taylor served as chairman of the Coordinating Committee who gave guidance and leadership to the project throughout. Members of this committee were:

Dr. S. C. Ashcroft, George Peabody College for Teachers

Dr. Natalie Barraga, The University of Texas at Austin

Mrs. Ruth Holmes, Illinois Braille and Sight Saving School

Mr. Cleve Kederis, Doctoral student, Peabody College

Dr. Carson Nolan, American Printing House for the Blind

Mrs. Rosemary O'Brien, Montgomery County Public Schools, Maryland

Miss Josephine Taylor, U. S. Office of Education

Each of these persons gave invaluable assistance in many ways. Although it is infeasible to name each person, the directors and participants in the Training Institutes made numerous suggestions to be incorporated into this guide to make it useful to teachers, and are to be commended for their interest and dedicated efforts.

The completion and issuance of this kit could not have been accomplished without the cooperation of the staff in the Division of Research and Development, American Printing House for the Blind who assumed responsibility for the printing and

dissemination of information.

Concommitant with the preparation of the materials for the kit, Institutes funded by the Division of Training Programs, Bureau of the Handicapped, USOE, were conducted by Colleges, Universities, and State Education Agencies scattered throughout the United States in order to reach as many teachers as possible. Now, each school and each teacher can accept the challenge to make sure that every child with low vision has the opportunity to learn to use it in the most efficient manner possible.

Austin, Texas
July, 1970

Natalie C. Barraga
Editor

INTRODUCTION

In recent years, eye specialists, educators, and other professionals have focused increasingly upon the possibilities for greater efficiency in the use of visual learning abilities, especially in children with low vision. Because of the evidence that visual acuity measurements have no one fixed value but may differ among individuals with similar eye conditions and within the same individual under varying situations, the use of visual acuity as meaningful information for educational purposes is considered of less importance to the teacher.

Children who have such low acuity designations as light perception (LP), hand movement (HM), object perception (OP) or a measurement of less than 10/200 may be given no opportunity to develop their visual learning potential when the assumption is made that they lack sufficient vision to use it as the primary means of learning. Perhaps such a premature decision is based on a medical recommendation that the child use braille or the teacher feels that it is necessary to concentrate on either tactual or visual learning to the exclusion of the other. Teachers need to give each child an opportunity to develop all his sensory modalities, and to work with children in visual experiences as well as tactual ones rather than accept the suggestion of braille without question. The primary objective should be to permit each child to develop his visual ability to

the highest possible efficiency in order to supplement his tactual and auditory senses even though it may never become his chief mode of academic learning.

Educators and others have expressed increasing concern regarding the possibility for stimulation and development of greater efficiency in the functional use of any degree of vision. For this reason, teachers may find that a guide such as this one may be useful in assisting them to determine whether a child is utilizing fully his residual vision and to plan more realistically for such children. A glossary of terms is included in the Appendix for those who find some words confusing or are not accustomed to their use in reference to visual functioning.

In order to understand the learning process for children who have very low vision, consideration must be given to the nature and functions of the total visual system. The eye, which is only one part of this system, is the end organ through which messages can travel to the brain. This organ may have missing structures, impairments in some parts of it, or may pick up very weak or distorted messages. Despite these factors, when light can enter the eye and stimulate even a few of the retinal cells, some information can be sent on to the brain.

Visual learning is dependent, not on the eye alone, but also on the ability of the brain to perform its functions of

taking whatever information comes to it from the eyes, coding, sorting and organizing into images, and storing for association with other sensory messages or far recall later. In view of this fact far too much emphasis may be placed on "the amount of measured acuity," since it is really an unknown quantity.

The visual functioning ability of the child is primarily developmental--the more the child looks, especially at close range, the more he stimulates the pathways to the brain. As the brain is given more and more information, there is an eventual accumulation of a variety of visual images and memories. One of the primary problems of the low vision child is that there is very little which he can "pick up" just incidentally through his visual sense. He needs to be taught the process of discrimination between the forms, outlines, pictures, and symbols which may never have been brought to his attention. This process doesn't "just happen" when he looks; it is a complex pattern of learning, beginning with the very simplest types of visual forms and progressing gradually to more detailed patterns of visual representations.

Visual perception is much more than clearness and sharpness (acuity), it is the ability to construct a visual image, to make distinctions in terms of differentiating characteristics, and to give some meaning to what one sees.

The sensory function of the eye/s is so closely related

to perceptual development in the brain that it seems clearer to talk about visual perceptual development. The child with low vision, never having been stimulated "to look" for the purpose of making discriminations, probably has visual perceptions which are blurred, and objects are likely to appear as vague masses. There is no specific form, no contour, and no spatial location to what is seen. The continuous searching with the eye/s enables the child to focus on the details so that what he is looking at begins to stand out from the background and the "blob" takes on a specific form or contour. The continued looking with the eye/s reduces the blurring effect so that each object viewed begins to have a definite form and the image becomes constant. When a specific form always appears with the same characteristics and is distinct from other forms, a name can be assigned to it, and the child can soon recognize it and label it by name. The form may be clear or fuzzy, large or small, be lying down or sitting up, but it is the same form and has the same name.

By understanding this process, we can more easily accept the fact that children "learn to see." When the eye itself is functioning normally, the child learns visually by himself for the most part, but when vision is impaired in the eye, he must be led carefully step by step in his visual development and taught how to use the vision he has and to understand what he is able to see.

In addition to the physical (eyes and their function) and perceptual-cognitive (brain) aspects of seeing, there is another important factor in "learning to see" --the psychological feelings and attitudes. Children have varying degrees of interest and motivation in learning generally--the same is true when applied to visual learning. If the child wants to "learn to see" by looking, he will try harder and probably tire less quickly. The child who has the attitude that he can "learn to see" will work harder also because he will want to feel the joy of actually being able to use his eyes.

With consideration of these three factors, physiological, perceptual-cognitive, and psychological, teachers need to be concerned with the maximal use of low vision as a part of the child's total learning potential. The development of visual abilities to the highest possible level of efficiency is based upon the understanding and acceptance of the following:

1. The development of visual ability is not innate and automatic.
2. Visual ability is not determined nor can it be estimated by visual acuity measurements alone.
3. Visual ability and functioning is not related necessarily to the kind or degree of impairment or loss.
4. Visual ability and efficiency may be learned through a sequential program of visual experiences.

The remainder of this handbook is designed to:

1. Suggest and explain general objectives related to visual development.
2. Assess the present level of visual functioning of each low vision child.
3. Identify the specific visual behaviors to develop in children.
4. Suggest the sequence and variety of experiences and activities to promote visual learning.
5. Describe the nature and sources of materials which are appropriate for the development of visual learning abilities.

GENERAL OBJECTIVES

I. TO DETERMINE THE VISUAL FUNCTIONING LEVEL OF EACH CHILD WHO SHOWS ANY VISUAL POTENTIAL (Light Perception, Motion-Object Perception or greater).

In initial encounters and observations of children, teachers are usually making an assessment of previous learning experiences, how the children explore and adjust to the classroom setting, and attempting to develop a comfortable relationship with them. Because it is difficult, if not impossible, to observe casually just how effectively each child is able to use his small amount of vision, it is most important that teachers have some objective means of determining just how much meaning each is able to gain from visual learning experiences and materials. The Visual Efficiency Scale has been designed to determine the level to which each child's visual discrimination and learning has developed in terms of his understanding of the forms, objects, pictures, and symbols at which he looks.

Teachers must use their own judgment and creative approaches in using the scale. The scale is <u>not</u> a test, should never be referred to as a <u>test</u> nor considered to provide information comparable to that obtained with standardized measures. The primary purpose for using the scale is to determine what the child can see and how efficiently he can make

visual discriminations of varying sizes and numerous degrees of complexity. (See Directions for Administration of Scale).

Knowledge of this nature is necessary before teachers can develop realistic and appropriate plans for visual learning experiences in the classroom. Therefore, every child who is known to have observed or measured vision should be administered the Visual Efficiency Scale in order to determine his functional efficiency. In addition, the teacher will have a better basis for estimating the visual learning potential of the child and the nature and type of visually stimulating materials most appropriate for him. The following guidelines are suggested for assessment and interpretation of the behavior to be observed:

1. How close to the page does the child hold the page?
2. Does he use both eyes together, only one eye, or first one and then the other? Does he move his head as he looks across the page or does he move the page back and forth?
3. How does he look at the items--as a whole, in parts, in a circular fashion, or without any particular pattern?
4. What are the verbal remarks and reactions of the child during the procedure?
5. How does he use the pencil for marking? Does he mark on the form or figure, beside it, above it, or under it?
6. What is the child's interest in the items? Does he

seem relaxed, anxious, tense, or disinterested?

7. How much and what type of lighting does the child seem to need?

Taking notes regarding the above will be very valuable. His functional performance as such is important, but is no more important than the manner in which he performs and the attitude reflected by his remarks or his interest. Specific visual behaviors related to the tasks on the scale are included in the Appendix.

II. TO DEVELOP INDIVIDUAL PRESCRIPTIVE PLANS FOR THE STIMULATION AND DEVELOPMENT OF ALL VISUAL POTENTIAL.

After a careful study of the child's performance, notes taken during the administration, and reflection on the observed behavior, the teacher should plan a prescriptive teaching schedule for each child. By use of the profile sheet individual strengths and weaknesses in the range of visual tasks will be useful as a guide. An example of three profiles and the suggested prescription for each is included in the Appendix. Even though he may be able to discriminate and understand some forms, outlines, objects, and symbols, the specific visual behaviors in which he needs to increase his efficiency are indicated.

The program planned for some children could cover the

entire stimulation sequence (presented later in this guide) but should focus specifically and with a concentration of activities in those areas where his performance is weak or where the child appears not to have developed his visual abilities. For example, if a child is able to see the forms, but is unable to tell differences between them or to match two identical forms, then it is evident that his visual functioning is presently at a very low level of efficiency. He must have an opportunity to look at a wide variety of visual forms and to learn how to see the distinctive cues which differentiate one from the other. On the other hand, a child may have satisfactory efficiency with forms, have marginal efficiency in outline and pattern details, but a very low efficiency in letter and word discrimination. Examples of profiles of low efficiency, marginal efficiency, etc. with appropriate prescriptions have been included in the Appendix for reference if desired.

III. TO DEVELOP AN INTEREST IN AND TO FOSTER A POSITIVE ATTITUDE TOWARD "LEARNING TO SEE" ACTIVITIES.

Children with very low vision who have been considered "blind" (by parents and others) may have accepted that they can't see and be unwilling to "try to look with their eyes." Moreover, some children may never have been given an opportunity to try to see, and have not experienced the satisfaction

of actually being able to see by looking. Obviously, such children have no way of knowing what they may experience; some may even be fearful that they won't "see" anything and will not make an effort to look with the eyes; a few others may have the attitude that they will have to work harder if they learn to "see" things or that more will be expected of them than they feel they can do.

The primary concern with low vision children "who seem to show no interest" is to design the activities as "seeing" games so that an interest in looking at more and more objects and materials can be developed. Most children, when they become interested, begin to value themselves and their abilities in more positive ways and become much more capable of learning about all of the things around them as well as things they may be able to enjoy in books and magazines.

IV. TO ENCOURAGE GREATER CONTROL OF EYE MUSCLES TO FACILITATE FIXATION, TRACKING, AND FOCUS.

Children who have never had the opportunity to look at visual learning materials (at a very close range) for the purpose of getting meaning from them or understanding their distinctive features may have little control of the eye muscles. They will need to be encouraged and taught how to fix and hold eye/s on a particular form or object. Then they need to be

taught how to follow across, up and down, or around the contours and outlines so as to distinguish every important detail of what they see. To be able to note specific details within complex figures or words requires the ability to bring the image into a point of focus and to maintain it long enough to pick out the distinctive features, and to differentiate the minute details in related figures or in letter and word symbols.

Children with only peripheral vision may need to work very slowly and experience many more visual activities in order to show any consistent improvement. When children have had cataracts removed or other surgical procedures which have given them additional vision they will need slow and patient guidance in learning to interpret and understand the things they are able to see. Even though they may have the physical ability to see, they probably lack the perceptual development of visual imagery to enable them to make discriminations and recognitions rapidly or efficiently. They simply have to learn to understand the visual distinctions and the names and labels for the things they see.

V. TO OFFER ENCOURAGEMENT, MOTIVATION, REINFORCEMENT, AND SUPPORT TO THE CHILD IN ALL VISUAL ACTIVITIES.

For some children with low vision, continuous encouragement will be necessary to maintain interest and to keep their curiosity aroused. Being able to play "seeing games" can be very

satisfying and motivating. Frequent praise for every successful effort will provide sufficient reinforcement for most children to keep trying even when progress seems to be very slow.

If the child can see only a form or an outline in the beginning, he needs to be able to tell the teacher how it looks to him and whether it has lines or curves or corners or points. If inaccuracies need to be pointed out, this can be done after the child has been commended for being able to see and talk about any aspects of the figures. Most children will need constant support and assistance in picking out features which they can see; they need to talk <u>about</u> and talk <u>with</u> the teacher about the things which they are seeing. Teachers need to question the child about how something looks rather than "telling" him what something is by name or what it is that he should see. Children will need to be given assistance in making associations to things they have previously seen, to relate objects and pictures to basic geometric forms and outlines so as to develop a strong frame of reference for efficient recognition.

A large part of the child's success in developing his visual abilities will be determined by the enthusiasm, encouragement and support, and patience of the teacher as she explores every possibility for teaching the child how to "learn to see."

VI. TO INVOLVE THE CHILD IN PREPARING AND ASSIMILATING A BOOKLET REPRESENTATIVE OF HIS DAILY ACCOMPLISHMENTS AND HIS OVERALL ACHIEVEMENTS IN VISUAL PERFORMANCE.

Daily or periodic worksheets of what the child can see or what he has learned to trace or reproduce visually can be a personal reinforcement for him and can be shown to parents, friends, etc. with "Look what I saw today!" A booklet of drawing, cutting and assembling activities can be assimilated for the child to keep and to take home with him. He will have evidence of his abilities and can sit down and talk about and demonstrate his visual abilities to himself and to others.

VII. TO REASSES VISUAL FUNCTIONING AND EFFICIENCY AFTER A PERIOD OF TRAINING IN VISUAL DEVELOPMENT.

During the process of training in visual perceptual development, teachers may be desirous of knowing how effectively the children are progressing in relation to their previous levels of visual performance. Any, or all portions of the Visual Efficiency Scale may be administered periodically; an alternative would be for the teacher to develop similar items of her own to use in reassessment. Another means of providing continuing assessment would be a daily or weekly check sheet of visual behaviors related to the specific objectives presented in the next section.

Teachers are encouraged to use their own ideas for evaluating each child's progress. The important thing is to reassess the child's visual functioning at the time when it is thought that he has approached the point at which he can initiate and follow through with his own stimulation; or when it is felt that his visual perceptual development is in keeping with his mental age level and that he is performing visually at his maximum capacity at that point in time and in relation to his visual condition.

PREPARATION FOR VISUAL DEVELOPMENT PROGRAM

In order to stimulate interest in visual development and in learning to see more things, many children may need to spend some time visually investigating objects in the classroom or in the natural environment to broaden their visual experiences. Exploring visually the concrete materials in the environment and the real-life objects around them should precede the introduction of the more artificial materials representative of actual things. Concommitant with the focus on visual awareness, attention needs to be directed to the development of language to understand and recognize specific visual cues such as shape, size, position, likenesses and differences. The words to talk about what he sees helps the child to clarify his visual impressions and enables the teacher to guide and assist him more effectively.

Children who have had limited opportunity to look at learning materials at close range or "try to see" may need some guidance in the muscular control of the eye/s when looking at small objects or pictures. Prior to the initiation of more complex activities with visual materials, it may be desirable to work with some of the children in the following ways:

1. Using a "pen-light" or small flashlight, work with the child asking him to (a) hold his head still while he looks with his eyes at the light; (b) follow it back and forth from his left to his right; (c) follow it up and down from above his head to his waist; (d) follow it in a circle in front of his face. For some children it may be desirable to try this activity in a darkened or semi-darkened room. To develop tracking abilities or fixation ability at more distant points, spot lights, revolving lights or color wheels, or colored filters over light bulbs may be quite successful.
2. Put large black or colored dots, squares or "sticks" on a card--ask the child to move his finger around the edge of the forms as he follows with his eye/s. Some children may need very large forms whereas others are likely to find smaller ones more useful. When additional light is needed, the child may be seated with his back to a window for natural daylight; for some children, the use

of a tensor light with a high intensity bulb focused directly on the form and with no reflection back toward the eyes is very effective.

3. Develop any games or activities which will give the child practice in additional muscular control of the eye/s.
4. Give the child forms or stencils to trace to begin the development of hand-eye coordination.

So long as the lighting is comfortable and effective for the child and the possibility for glare is controlled, the above activities may be varied and repeated regularly until the teacher is satisfied that the child has developed some efficiency in muscular skills; he is unable to progress any further at that time; or until he can be no longer encouraged to try. The time required and the rate of progress is likely to vary from child to child. Teachers should use their own judgment as the psychological needs of individual children are perceived.

In the beginning, visual stimulation activities may need to be for short periods of 5 to 15 minutes and the time increased gradually up to 30 or 45 minutes as interest increases and fatigue decreases. Most children will give some indication of when they are tired so that it is seldom necessary to ask them directly.

Some children may be able to make use of magnifying devices or optical aids if such are available and they are able to use them with less effort. If children have never used magnifiers or aids, they will need the opportunity to experiment with them by adjusting and readjusting for their own comfort and the best angle and distance for enlarging the image. The child's interest and psychological attitude toward such devices will be the most appropriate indicators of their effectiveness. Some children may be able to function more easily with the use of aids. Until the child himself indicates an interest and desire to use artificial magnification, he is not likely to cooperate and insistence on the use of magnifiers may have a negative effect on his trying to learn to see.

All materials should be large enough for children to see easily in the beginning. Sizes may be reduced gradually as long as each child is successful. Some will be able to see and understand forms, outlines, objects, and symbols even when reduced to very small sizes, but others will be unable to make discriminations when materials are too small. Teachers should use their judgment to decide when each child has reached the point of minimal size for him and go on to the next activity.

Although the primary purpose is not necessarily to teach each child to read visually, some children may increase their visual efficiency to the extent that they are able to do some

reading of labels, signs, titles, headlines, or even sentences and stories. Regardless of whether children learn to read very well visually, they will be able to gain a greater range and variety of information and contribute immeasurably to their total perceptual development and learning by using their vision in a variety of ways and be becoming aware that they can "learn by looking." A few children may be highly motivated and have the ability to develop visual efficiency to the degree that they will be able to use both print and braille for reading if they so desire and thereby extend their learning capacities and enhance their achievement potential.

SUGGESTED SEQUENCE OF ACTIVITIES FOR VISUAL DEVELOPMENT

Teachers should remember that the following outline of activities is intended primarily as a guide. Many other similar activities and/or games can be developed by individuals in addition to or to replace those suggested in the outline. The needs and responses of the children are good indicators of the desirability of supplementary activities to be initiated by the teacher. Similarly, the materials suggested are not intended to be inclusive of all appropriate ones for particular objectives. Teacher-made or selected materials from magazines, books, or newspapers may be just as effective in producing the desired learning.

OBJECTIVE 1

TO ENCOURAGE VISUAL DISCRIMINATION OF THREE DIMENSIONAL GEOMETRIC FORMS AS TO SIZE, LENGTH, HEIGHT, ETC. AND TO LEARN TO PLACE THEM IN INCREASING AND DECREASING ORDER.

Activities and Materials:

Using Mitchell Wire Forms, Montessori Cylinders or pegs, blocks or other concrete forms:

1. Teach likenesses and differences
   (a) begin with a group all of which are alike in form but one;
   (b) several very unlike forms from which to choose one to match;
   (c) several similar forms from which to match one.
2. Repeat the above using different sizes, heights, lengths, etc.
3. Place blocks or pegs in order according to increasing and decreasing sizes using descriptive words of larger, smaller, taller, shorter, etc.

(Children should be encouraged to check themselves by touch if necessary until all activities can be performed visually).

Types and Sources of Materials:

Cylinders--Creative Playthings

Geometric Forms--Judy; American Printing House

Graduating Shapes--Tactile Aids

Dowel rods from lumber yard or shop cut to varying lengths and sizes

OBJECTIVE 2

TO NOTE COLOR LIKENESSES AND DIFFERENCES, VARIATIONS OF SHADES IN ONE COLOR, AND LIGHT AND DARK DENSITY FACTORS IN ALL COLORS WITH GEOMETRIC FORMS

Activities and Materials:

1. Present cards with six basic colors (pure tones)--teach color names.
2. Present cards with light to dark shades of each of six basic colors and black to gray--teach concept of lighter and darker, order in sequence with exercises in matching and in likenesses and differences.
3. Color games with color rods and/or Cuisenaire rods, color cone.
4. Relate color names and materials with familiar things such as grass, sky, etc.

Types and Sources of Materials:

Cuisenaire Rods--Cuisenaire Company

Contrast Cone--Creative Playthings

Visual Motor Perceptual Teaching Materials--Teaching Resources, Inc.

Montessori Rods--Creative Playthings

Teacher-made color cards or charts

OBJECTIVE 3

TO FOSTER VISUAL DISCRIMINATION AND RECOGNITION OF FORMS IN TWO-DIMENSIONAL REPRESENTATIONS IN BLACK AND IN COLORS.

A. IN FLAT WOODEN OR CARDBOARD PUZZLES

B. FORM REPRESENTATIONS ON PAPER OR CARDBOARD

Activities and Materials:

1. Put together form puzzles pieces, point out corners, points, curves; and straight lines; have children trace around each with finger as he looks at it.
2. Match puzzles forms with actual forms, note likenesses and differences.
3. Teach recognition of forms by names.
4. Invert and turn forms at various angles for spatial orientation.
5. Repeat teaching of likenesses and differences and matching of forms as representations on paper.
6. Put forms together following picture designs.
7. Practice recognition of forms by names--in form boards and puzzles and on paper.

Types and Sources of Materials:

Geometric Form Cards--A. Daigger

Parquetry Blocks and Shape Puzzles--Developmental Learning Materials

Form Puzzles--Visual-Motor Teaching Materials

Flash cards of geometric figures--Teacher-made (cards and felt-tip pen in various colors and in black)

OBJECTIVE 4

TO DISCRIMINATE AND RECOGNIZE GEOMETRIC SHAPES IN OUTLINE FORM

Activities and Materials:

1. Present concrete outline forms and outlines to be tactually explored if teacher feels it will be helpful. Solid forms and outlines of forms may be made on thermaform sheets.
2. Repeat discrimination activities in likenesses and differences, matching, etc. with outline of geometric shapes in six basic colors.
3. Match outline shapes with related, similar, and identical geometric forms on paper. Have child draw around or use stencils for producing his own outlines with crayon, felt pen, or pencil.
4. Stress "how to look" to find different cues; discuss shapes, contours, points, curves, straight lines, corners.

Types and Sources of Materials:

Wire forms--thermaform outlines of shapes developed from pipe-cleaners, picture-wire, or string

Mitchell Wire Forms--American Printing House

Visual-Motor Perceptual Teaching Materials--Teaching Resources, Inc.

Geoemtric Shapes in Color--A. Daigger

Teacher-made flash cards of shapes

Shape Dominoes--Creative Playthings

OBJECTIVE 5

TO DEVELOP VISUAL IMAGES OF FORMS AND SHAPES BY ASSEMBLING AND INTEGRATING

Activities and Materials:

1. Present forms or shapes, then puzzle parts of same forms or shapes for child to put together. Remove whole forms and shapes, give child only puzzle parts and let him put them together to form the whole. (Use all shapes such as circle, square, triangle, retangle, crescent, star, cross, cones, cylinders, etc.)
2. Involve children in construction of shapes with use of corrugated cardboard, clay, straws, etc. Encourage them to draw the shapes in free hand fashion following dotted lines, then without dots as cues.

Types and Sources of Materials:

Shape Puzzles--Developmental Learning Materials

Small Form Puzzles--Teaching Resources

Large Form Puzzles--Teaching Resources

Teacher-made Puzzles

OBJECTIVE 6

TO RELATE GEOMETRIC FORMS AND SHAPES TO SIMILAR OBJECT FORMS AND SHAPES

Activities and Materials:

1. Show child black forms of known objects such as toys, fruit, animals, etc.
2. Relate to similar geometric forms.
3. Note likenesses and differences in object forms by calling attention to points, corners, curves, straight lines, etc.
4. Repeat with solid colored pictures of similar object.
5. Repeat all activities with only outline shapes of objects.

Types and Sources of Materials:

Association Cards--Teaching Resources, Inc.

Picture Readiness Game--Garrard

Teacher-made cards of black forms and shapes

Magazine pictures

OBJECTIVE 7

TO DISCRIMINATE AND RECOGNIZE OBJECT OUTLINES AND COLORED PICTURES OF FAMILIAR TOYS, FOOD, CLOTHING, HOUSEHOLD FURNITURE, TOOLS, ETC.

Activities and Materials:

1. Note likenesses and differences between object contours and shapes.
2. Relate to like objects from among different and similar outlines and pictures.
3. Practice naming objects.
4. Teach use of objects
5. Match object outlines and pictures with concrete objects in actual or miniature size.
6. Begin with large outlines and pictures and diminish to smaller ones.

Types and Sources of Materials:

Collection of object facsimiles such as toy furniture, tools, etc.

Teacher-made cards

Readiness games or Readiness books

Picture Dominoes--Creative Plaything

Match-Me--Benton

Picto-Lotto--Owen

Object Lotto and Form Lotto--Constructive Plaything

Match and Check--Scott, Foresman

OBJECTIVE 8

TO DISCRIMINATE AND RECOGNIZE AND SORT PICTURES OF SINGLE OBJECTS ACCORDING TO USE AND CLASS CATEGORIES - TO NOTE MISSING GROSS DETAILS OF OBJECTS

Activities and Materials:

1. Group object pictures according to class--all toys together, all furniture together, etc.
2. Repeat exercises naming objects, discussing their use, noting the likenesses and differences by recognizing distinctive feature of each.
3. Group pictures according to like shapes among all class categories--example: spoon--hammer; apple--ball
4. Play "what's missing game"

Types and Sources of Materials:

Classification Game and Opposite Concepts--Instructo

Go-together Cards--Creative Playthings

Together Cards--Constructive Playthings

Association Picture and Color Cards--Developmental Learning Materials

Teacher-made cards and pictures

Pages from readiness books showing classes of objects

What's Missing Lotto--Hoover

Story Cards - Tell what part is missing--Milton Bradley

OBJECTIVE 9

TO MAKE FINER DISCRIMINATIONS FROM OBJECT OUTLINE WITH INNER DETAILS AND IN VARIOUS SPATIAL POSITIONS.

Activities and Materials:

1. Present similar and related pictures of faces, stick figures, various objects with different details for matching. Discuss likenesses and differences.
2. Group like and similar pictures all in different spatial positions.
3. Group different pictures in same spatial position. example: sitting, standing, lying, front view, side view, etc.
4. Progress from large to small in size
5. Teach cues for "looking for specific details."

Types and Sources of Materials:

Perception Plaques--Creative Playthings

Stimulus Response Strips--Milliken

Lotto Games--Constructive Playthings

Match-me--Benton

Spatial Relation Cards--Developmental Learning Materials

Fitzhugh Plus Program--Allied Education Council

Picture Puzzle games in newspaper puzzle section or in children's magazines.

OBJECTIVE 10

TO CONTINUE DISCRIMINATION OF FINER DETAILS IN ABSTRACT OUTLINES AND PICTURES - TO ASSEMBLE OUTLINE PICTURES.

Activities and Materials:

1. Present sheets containing abstract outlines and pictures with detail for noting likenesses and differences and for matching.
2. Play games with matching cards of abstract symbols and pictures.
3. Put together puzzles of single objects and pictures.

Types and Sources of Materials:

Match and Check--Scott, Foresman

Independent Activities, Level 1--Continental Press

Frostig Sheets--Follett Publishing Company

Visual Discrimination, Levels 1 & 2--Continental Press

Object and picture puzzles--Teacher-made

Whole-part-whole puzzle--Playskool

Animal Puzzles--Developmental Learning Materials

People Puzzles--Developmental Learning Materials

OBJECTIVE 11

TO DEVELOP THE ABILITY TO NOTE ACTION IN PICTURES AND TO RELATE THE STORY IN SEQUENCE OF EVENTS.

Activities and Materials:

1. Present variety of pictures and cards denoting action--let child describe the action he sees.
2. Help child place pictures in sequence so that he can tell a story about the events as they occur.
3. Note specific details which indicate the differences in the action portrayed--background from foreground, etc.
4. Use colored comics such as Peanuts, etc. which have little if any printed dialogue.
5. Have older children write a story about the pictures; Other children may be able to learn to write the words which describe the action.

Types and Sources of Materials:

Motor Expressive Language Cards--Developmental Learning Materials

Sequential Pictures--Developmental Learning Materials

See-Quees--Judy Company

Perceptual Motor Materials--Teaching Resources

Magazine pictures--Teacher-selected

Comic books and coloring books with good pictures

OBJECTIVE 12

TO NOTE DISCRETE ELEMENTS WITH PICTURES DEPICTING SCENERY, FAMILY ACTIVITIES, ETC., AND TO BE ABLE TO ASSEMBLE PUZZLES OF SUCH SCENES.

Activities and Materials:

1. Discuss how to look for distinctive elements--let child point out details on request.
2. Identify all things or persons, or actions within pictures as child makes-up story about each.
3. Present picture puzzles of complex scenes for child to assemble.
4. Present several action pictures--give child a stimulus word or sentence; let child arrange cards in that sequence.

Types and Sources of Materials:

Magazine or catalogue pictures--Teacher selected

Families and Friends--Instructo

Match-Game, Sets 1 & 2--Garrard

Matchetts--Judy Company

Kindergarten and Readiness Charts--Selected

Picture puzzles--Teacher-made

Pictures and Patterns--Follett

OBJECTIVE 13

TO NOTE AND VISUALLY DISCRIMINATE HIDDEN PARTS, SHADOWS, ETC., IN PICTURES AND IN ABSTRACT COMPLEX FIGURES.

Materials and Activities:

1. Present pictures with portions of body parts, object parts, etc., partially visible--let child find parts of figures and objects and talk about "what's missing."
2. Present abstract pictures in which child finds a figure part hidden within another larger figure.
3. From selected pictures let child pick out shadows of objects, buildings, persons, etc.

Types and Sources of Materials:

Magazine and Readiness Pictures--Teacher selected

Visual Motor Perceptual Teaching Materials--Educational Service

Frostig Perceptual Program--Follett

Independent Activities--Continental Press

OBJECTIVE 14

TO ASSOCIATE LETTER AND WORD SYMBOLS WITH OBJECT PICTURES AND ACTION PICTURES

Activities and Materials:

1. Use pictures of previously recognized objects and actions accompanied by appropriate letters and/or words.
2. Teach related words and/or letters to pictures.
3. Practice with a variety of games with letters and words of diminishing print size as long as child can still make visual discriminations.
4. Use Magazine print - different size commercials, slogans, etc.
5. Encourage child to draw symbols and to cut action and object words for association with pictures.
6. Assist child in making his own book of pictures with reading material.

Types and Sources of Materials:

Lower case letters--Creative Plaything

Dolch Picture Word cards--Garrard

Picto-Lotto Cards--F. A. Owen

Picto-Word Flash Cards--Constructive Playthings

Picture-Word Builder--Milton Bradley

My First Dictionary--Gossett and Dunlap

OBJECTIVE 14, continued

Types and Sources of Materials:

The Game of Match Word--Benton

Words and Action--Holt, Rinehart, and Winston

Structural Reading Series--Singer Company

Action Pictures and Name Pictures--Ideal

OBJECTIVE 15

TO DEVELOP DISCRIMINATION AND RECOGNITION OF INDIVIDUAL LETTERS AND WORD SYMBOLS.

Activities and Materials:

1. Present unlike alphabet letters for recognition. (a,l,h) (B,H,M, etc.) Relate to geometric forms of lines, curves, etc.
2. Present like alphabet letters for discrimination (C.H.O) (b,d,g,q, etc.)
3. Present words of known objects or actions unlike in configuration, length, different letters. Note likenesses and differences, matching, etc.
4. Choose words similar in configuration, length, and containing like or similar letters for matching and discrimination.
5. Find like sequence of letters within longer words.

OBJECTIVE 15, continued

Types and Sources of Materials:

Flash Cards, large letters and words--Teacher-made

Basic Word Cards--Garrard

Basic Sight Vocabulary--Garrard

Basic Sight Word Test--Garrard

Global Flash Cards--Milton Bradley

Phonetic Quismo--Milton Bradley

Phonetic Drill Cards--Milton Bradley

Pre-Primer Words--Gellis-Widmer

Fitzhugh Program--Allied Education Council

Rhyming, Levels 1 and 2--Continental Press

Thinking Skills, Levels 1 and 2--Continental Press

Readiness books on letter series--Houghton-Mifflin

Handwriting manuals

OBJECTIVE 16

TO DISCRIMINATE AND RECOGNIZE VISUALLY WORD PHRASES AND SEQUENCES OF WORDS AS RELATED TO PICTURES.

Activities and Materials:

1. Use word cards to put together phrases denoting action by matching to appropriate pictures.
2. Build simple sentences to illustrate pictures using word and phrase cards; use experience story approach so child gets meaning.
3. Practice matching phrases of similar and like words - discriminate between similar phrases and word groups.
4. Discriminate sizes and styles of type of various words and phrases.

Types and Sources of Materials:

Magazine pictures with captions--Teacher-selected

Headlines of various type styles--Teacher-selected

Cartoons, slogans, etc--Teacher-selected

Reading Readiness Books--Any variety

Sight Phrase Cards--Garrard

Sentence Builders--Milton Bradley

OBJECTIVE 17

TO FOSTER AND ENCOURAGE VISUAL READING OF SIMPLE MATERIALS IN GAMES, VERSES, AND STORIES.

Activities and Materials:

1. Play games and practice with a variety of reading readiness materials in various sizes and styles of printing and cursive writing.
2. With easy reading materials (games, cartoons, verses, simple stories) discuss pictures and actions presented; then focus on words, phrases, and sentences for reading.
3. Stress discrimination between similar words and sentences, and recognition of like letter and word sequences.
4. Encourage visual reading if child is able to make discriminations and is motivated to continue.

Types and Sources of Materials

Selected Christmas Cards, Newspapers, and Magazines

I Wonder Why (Large Type)--Winston Company

Easy-to-Read Books--Melmont

Surprise Stories, 1st Reader--Clear Type Publishing Co.

Cowboy Sam Series--Benefic Press

My First Reading Unit-Gel-Stern

Butternut Bill Series--Benefic Press

Readers Digest Skill Builder--Reader's Digest

APPENDIX

GLOSSARY OF TERMS

FIXATION refers to the act of focusing the eyes upon an object or visual stimulus on paper.

TRACKING with the eyes is to follow moving objects across or up and down.

FOCUS means to hold the eyes in position so as to bring a visual image to its clearest point of visibility.

VISUAL ACUITY refers to a measurement of the ability to discriminate clearly the fine details of objects or symbols at a given distance.

VISUAL FUNCTIONING refers to the response to visual materials of any nature at the time the child is attempting to use his vision for travel or for learning.

VISUAL PERCEPTION means that meaningful interpretation and understanding is given to what the child sees visually.

VISUAL EFFICIENCY refers to the speed and accuracy of responses to visual materials.

VISUAL CODING refers to the process of bringing together singular images or parts of images into meaningful information about what one sees.

VISUAL SORTING is a process which involves the ability to distinguish between and among various images to make a final recognition of an object or group of objects seen with the eyes.

FIGURES refer to outlines of objects and linear or geometric shapes with or without detail.

SYMBOLS is the term used to refer to letters and words which appear singly or in sequence with each other and may or may not be in association with the concrete object or picture.

PERCEPTUAL means the active process of receiving and interpreting the visual images transmitted through the optic nerve fibers.

COGNITIVE refers to a thought process involved in understanding and thinking realistically about information and knowledge stored in the brain.

PRESCRIPTIVE TEACHING refers to the use of a program sequence of activities designed for a specific child based on individual needs and characteristics.

Visual Behaviors Related to

VISUAL EFFICIENCY SCALE

Item Description	Visual Behavior Task
1. Linear Form	Form matching--unlike geometric figures
2. Linear Form	Form discrimination--like geometric figures
3. Contour Form	Position in space of related contours
4. Contour Form	Form recognition multi-contour forms
5. Object Form	Form matching--similar object forms
6. Linear/Form	Light-dark density detail--high contrast
7. Linear/Form	Light-dark density detail--low contrast
8. Outline/Form	Matching in density detail
9. Outline/Contour	Matching in density detail
10. Outline Shape	Size discrimination--different sizes
11. Outline Shape	Size discrimination--similar sizes
12. Abstract Contour	Position in space--like contour
13. Abstract Outline	Detail matching
14. Abstract Contour	Position in space--small size
15. Abstract Outline/Inner detail	Like outline--similar detail
16. Abstract Outline	Position in space--similar detail

Item Description		Visual Behavior Task
17.	Abstract Outline	Matching similar detail
18.	Linear Abstraction	Position in space--linear tracking
19.	Linear Outline Abstraction	Matching--linear detail
20.	Linear Outline Abstraction	Matching--complex inner detail
21.	Linear Symbol	Position in space--like symbols
22.	Object Outline	Object assemblage
23.	Detached Object Outline	Object unification
24.	Detailed Object Outline	Object unification and complex integration
25.	Disarranged Object Outline Parts	Object unification and integration
26.	Contour Outline Part	Outline detail unification
27.	Linear Perspective	Position in space--depth dimension
28.	Geometric Outline	Spatial perspective
29.	Outline Contour	Position in space--contour rotation
30.	Geometric Form/Outline	Spatial assimilation
31.	Detailed Object Outline	Detail matching--similar object outlines
32.	Object Perspective	Detailed matching--complex picture
33.	Abstraction Outline Part	Matching--part to whole
34.	Abstraction Outline Detail	Detail matching--part to whole
35.	Outline Abstraction	Matching--similar inner detail

Item Description	Visual Behavior Task
36. Single Symbol	Discrimination of density
37. Single Symbol	Position in space--symbol rotation
38. Grouped Symbols	Matching symbol sequence
39. Grouped Symbols	Discrimination of symbol sequence
40. Symbol Group Association	Recognition like group symbols
41. Detached Symbol Configuration	Matching symbol group
42. Symbol Configuration Association	Symbol group integration
43. Configuration Outline	Contour of grouped symbols
44. Single Symbol Reversal	Matching grouped symbols--complex inner detail
45. Single symbol reversal	Discrimination of inner symbol reversal
46. Internal symbol sequence	Matching inner-symbol grouping
47. Symbol Group Association	Discrimination of related symbol groups with unlike configuration
48. Symbol Group Association	Discrimination of related symbol groups with like configuration

Record of Performance on

VISUAL EFFICIENCY SCALE

The correct choices are indicated for each item. There are four choices in all the matching items. In these items, the correct response is numbered from 1 to 4 according to the appropriate choice. In items 2, 4, 28, 29, 39, and 45 the child is choosing the different one or a particular one. In these items, there are five possible choices so the correct response could be numbered from 1 to 5.

Case I

Section I

1.	2 +	7.	4 -	25.	2 -	21.	2 +
2.	4 +	8.	4 +	26.	3 -	32.	2 -
3.	2 +	9.	4 +	27.	3 +	33.	1 -
4.	2 -	10.	3 +	28.	3 -	34.	4 -
5.	3 -	11.	2 -	29.	1 -	35.	4 -
6.	2 -	12.	4 -	30.	4 +	36.	3 +

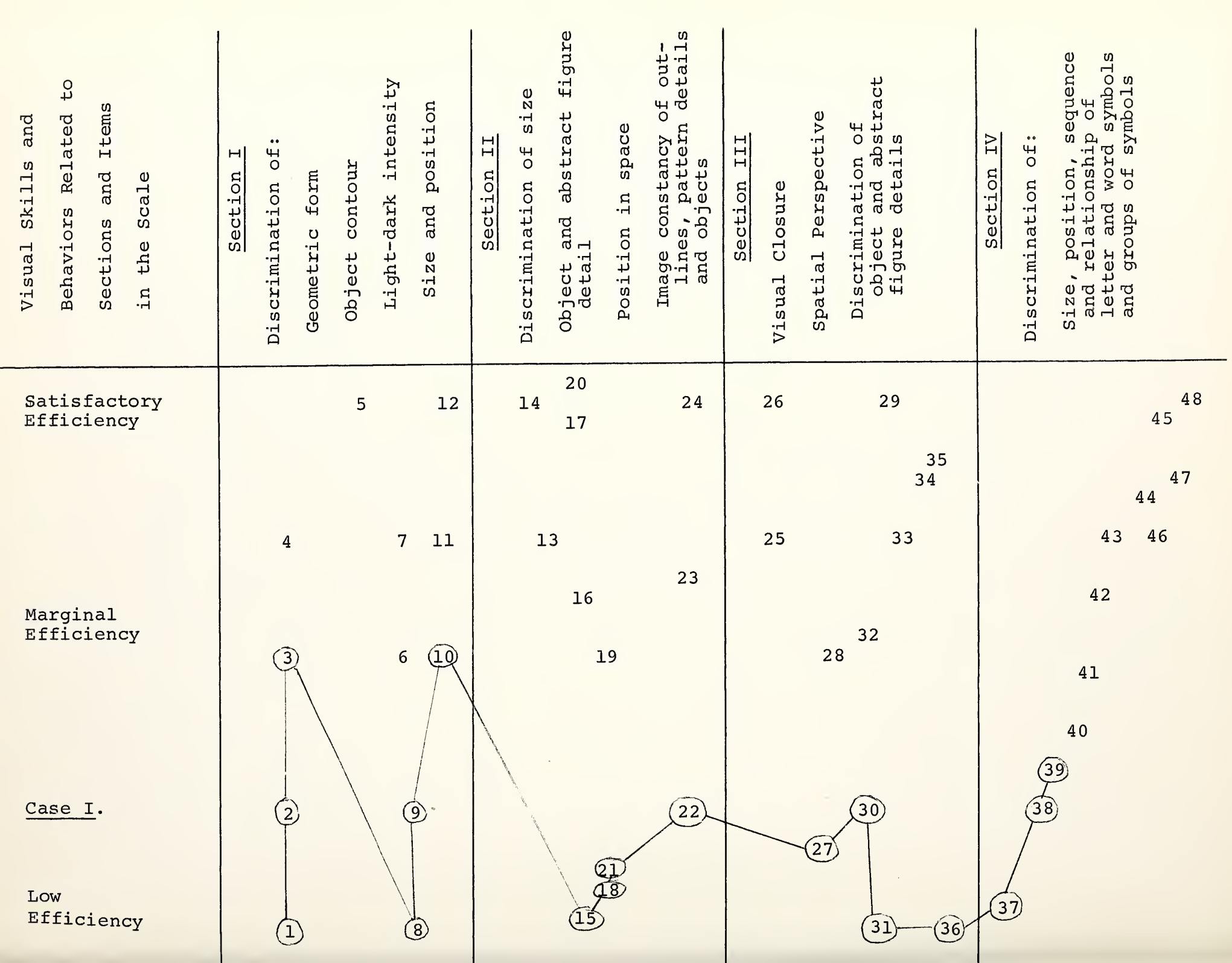
Section II

13.	2 -	19.	2 -	37.	2 +	43.	3 -
14.	4 -	20.	3 -	38.	4 +	44.	3 -
15.	3 +	21.	2 +	39.	2 +	45.	3 -
16.	2 -	22.	4 +	40.	2 -	46.	4 -
17.	4 -	23.	1 -	41.	2 -	47.	2 -
18.	2 +	24.	2 -	42.	3 -	48.	3 -

The accompanying profile sheet may be used to plot the performance to get a picture of the child's overall visual efficiency.

Totals

I	36
II	4
III	4
IV	3
Total	17


Visual Skills and Behaviors Related to Sections and Items in the Scale
Section I
Discrimination of:
Geometric form
Object contour
Light-dark intensity
Size and position
Section II
Discrimination of size
Object and abstract figure detail
Position in space
Image constancy of out-lines, pattern details and objects
Section III
Visual Closure
Spatial Perspective
Discrimination of object and abstract figure details
Section IV
Discrimination of:
Size, position, sequence and relationship of letter and word symbols and groups of symbols
Satisfactory Efficiency
Marginal Efficiency
Low Efficiency
Case I.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

Prescriptive Teaching Model

Case I

The performance of this child indicates that he is able to make discriminations between solid black geometric forms, even those which are only partially solid. However, he did not know or recognize the names of specific forms. He was successful in matching outlines of circles when there was a marked difference in size but could not note less discrete size differences. As the figures became smaller in size, he was unable to see them.

Some detail in outline figures could be seen when they were large. He was able to note the likenesses and differences regardless of spatial position. He was able to integrate some object parts but with little consistency. Outlines of objects were matched when seen singularly but not in a picture. He differentiated between large symbols presented one at a time but was not able to match symbols when grouped in words.

Overall his performance was at a very low level of efficiency. Visual stimulation should begin with the very first objective; he needs to learn to recognize all forms by name and learn to develop clear visual images of every basic form before beginning work on object forms.

Activities should be varied and repeated until the child reaches the highest level of visual functioning possible before

moving to the next objective. Progress is likely to be slow, and he will need much encouragement and reinforcement.

Just how efficient he can become visually cannot be extimated. Many factors will influence his visual development but if he really wants to learn to see things, has the ability to recall and think about the visual images, and has a patient, creative teacher he may be able to achieve a very satisfactory level of visual efficiency to enhance his overall learning.

Record of Performance on

VISUAL EFFICIENCY SCALE

The correct choices are indicated for each item. There are four choices in all the matching items. In these items, the correct response is numbered from 1 to 4 according to the appropriate choice. In items 2, 4, 28, 29, 39, and 45 the child is choosing the different one or a particular one. In these items, there are five possible choices so the correct response could be numbered from 1 to 5.

Case II.

Section I

1.	3 +	7.	4 +	25.	2 +	31.	2 +
2.	4 +	8.	4 +	26.	3 -	32.	2 +
3.	2 +	9.	4 +	27.	3 +	33.	1 -
4.	2 +	10.	3 +	28.	3 -	34.	4 -
5.	3 -	11.	2 -	29.	1 -	35.	4 -
6.	2 +	12.	4 -	30.	4 +	36.	3 +

Section II

13.	2 -	19.	2 +	37.	2 +	43.	3 -
14.	4 -	20.	3 -	38.	4 +	44.	3 -
15.	3 +	21.	2 +	39.	2 +	45.	3 -
16.	2 -	22.	4 +	40.	2 +	46.	4 -
17.	4 -	23.	1 +	41.	2 -	47.	2 -
18.	2 +	24.	2 -	42.	3 -	48.	3 -

Section III

Section IV

The accompanying profile sheet may be used to plot the performance to get a picture of the child's overall visual efficiency.

Totals	
I	9
II	6
III	6
IV	4
Total	25

Case II.

Satisfactory Efficiency

Marginal Efficiency

Low Efficiency

Visual Skills and Behaviors Related to Sections and Items in the Scale

Section I

Discrimination of:

Geometric form

Object contour

Light-dark intensity

Size and position

Section II

Discrimination of size

Object and abstract figure detail

Position in space

Image constancy of outlines, pattern details and objects

Section III

Visual Closure

Spatial Perspective

Discrimination of object and abstract figure details

Section IV

Discrimination of:

Size, position, sequence and relationship of letter and word symbols and groups of symbols

Prescriptive Teaching Model

Case II.

Solid black materials are easily seen by this child and he is able to note the differences in form intensity, and to recognize some forms by name. Minute differences in form contour, size and spatial arrangement are not as easily determined. The differences in detail of outline figures can be noted also when they are large and do not require sharpness and clarity. He seems to be able to discriminate regardless of position and can integrate parts into unified wholes when the size is large enough.

Abstract embedded figure parts can be matched and single letter symbols are discriminated easily. Grouped symbol sequences can be matched when the letters are large and clear.

The overall efficiency of this child is marginal which indicates probable potential for increasing visual skills and performance when properly stimulated. Little time needs to be spent on form discrimination except to determine his knowledge of color and variations and to make sure he can recognize all forms by name. The activities should begin by observing performance on objectives, two, three, and four and moving quickly to puzzles especially those with small pieces.

Care should be taken to listen to the language responses to object forms in order to note the manner in which he makes

visual associations and recognizes one object from another, and can perceive their relationships.

Material of smaller and and smaller size should be presented as he is successful in making discriminations and in noting finer and finer details.

Progress is likely to be rapid up to objective 12. From this point on he needs more and more visual stimulation with a variety of activities and materials to sharpen his visual perceptions. His potential for visual learning of words and of some reading is very good and he needs much opportunity to practice and refine these skills. If he is really interested and encouraged he will probably be able to read many things without great difficulty, and may even begin to do some of his reading through his visual sense if given the guidance and necessary assistance by the teacher.

Record of Performance on

VISUAL EFFICIENCY SCALE

The correct choices are indicated for each item. There are four choices in all the matching items. In these items, the correct response is numbered from 1 to 4 according to the appropriate choice. In items 2, 4, 28, 29, 39, and 45 the child is choosing the different one or a particular one. In these items, there are five possible choices so the correct response could be numbered from 1 to 5.

Case III.

Section I

1.	3 +	7.	4 +	25.	2 +
2.	4 +	8.	4 +	26.	3 -
3.	2 +	9.	4 +	27.	3 +
4.	2 +	10.	3 +	28.	3 -
5.	3 +	11.	2 -	29.	1 +
6.	2 +	12.	4 +	30.	4 +

Section III

31.	2 +	37.	2 +
32.	2 +	38.	4 +
33.	1 +	39.	2 +
34.	4 -	40.	2 +
35.	4 -	41.	2 +
36.	3 +	42.	3 -

Section II

13.	2 +	19.	2 +	43.	3 +
14.	4 -	20.	3 +	44.	3 +
15.	3 +	21.	2 +	45.	3 -
16.	2 +	22.	4 +	46.	4 -
17.	4 -	23.	1 +	47.	2 +
18.	2 +	24.	2 -	48.	3 -

Section IV

The accompanying profile sheet may be used to plot the performance to get a picture of the child's overall visual efficiency.

Totals	I	11
	II	9
	III	8
	IV	8
Total		36

Satisfactory Efficiency

Marginal Efficiency

Case III.

Low Efficiency

Visual Skills and Behaviors Related to Sections and Items in the Scale

Section I

Discrimination of:

Geometric form

Object contour

Light-dark intensity

Size and position

Section II

Discrimination of size

Object and abstract figure detail

Position in space

Image constancy of outlines, pattern details and objects

Section III

Visual Closure

Spatial Perspective

Discrimination of object and abstract figure details

Section IV

Discrimination of:

Size, position, sequence and relationship of letter and word symbols and groups of symbols

Prescriptive Teaching Model

Case III.

The visual functioning of this child indicates a fairly satisfactory level of efficiency with only a few gaps in discrimination of visual details, integration and image close, and differentiation between words and groups of words. The stimulation activities should begin with review of outlines, pictures, and noting the likenesses and differences in the inner details within each. Progress is likely to be rapid and motivation seems to indicate that there is a desire to "learn to see" more things.

The major concentration for this child should be on Objectives 12 through 17 and in practicing and strengthening visual reading skills. There is every indication that the potential for visual reading can be realized with ease. In this case, the child may be able to achieve reading ability in both print and braille if already a braille reader. If no reading mode has been established previously, then the major focus should be on visual reading with assistance in refining skills in discrimination, association, and integration of visual symbols and reading material. The present visual functioning of this child is indicative of a visual learner and maximum effort should be directed toward the efficient and effective use of vision as the primary means of learning in life experiences and in most if not all academic learning.

MATERIALS LIST

I. GEOMETRIC FORMS

A. Tactual

1.	Wonder Texture Box	Creative Playthings
2.	Form Boards	Tactile Aids for the Blind
3.	Progress Development Project #2	Tactile Aids for the Blind
4.	Graduating Shapes	Tactile Aids for the Blind
5.	Mitchell Wire Forms	American Printing House
6.	Form Board	Playskool, Inc.
7.	Geometric Figures and Solids	Milton Bradley
8.	Geometric Forms	Judy Company
9.	Cuisenaire Rods	Cuisenaire Co. of America
10.	Peg Grading Board	Constructive Playthings
11.	Contour Cone	Creative Playthings
12.	Wooden Cylinders (graduated) & Stand	Creative Playthings
13.	Graded Circles, Squares & Triangles	Creative Playthings
14.	Inset Cylinders	Creative Playthings
15.	Geometric Insets	Creative Playthings
16.	Pattern Learning Forms	Creative Playthings

B. Tactual and Visual

1.	Geometric Form Cards (Montessori)	Educational Teaching Aids Division of A. Daigger Co.

2. Parquetry Blocks & Designs	Developmental Learning Materials
3. Parquetry Design Blocks	Milton Bradley Company

C. Visual

1. Geometric Shapes in Color	Teaching Resources, Inc.
2. Shape Dominoes	Creative Playthings
3. Chrominoes	Childcraft Company
a. Puzzles-Integration of Parts	
1) Shapes Puzzles	Developmental Learning Materials
2) Small Form Puzzles	Teaching Resources, Inc.
3) Large Form Puzzles	Teaching Resources, Inc.

II. OBJECTS

A. Tactual

1. Progress Development Project #1	Tactile Aids for the Blind

B. Visual

1. Simple Objects & Geometric Forms	
a. Association Cards	Teaching Resources, Inc.
b. Figure-Ground Transparencies	Speech and Language Materials
2. Object Outlines with Inner Detail	

a. Stimulus Response Strips	Follett Pub. Company
b. Transparency Duplicating Books	Milliken Pub. Company
c. Perception Plaques, Clowns & Faces	Creative Playthings
d. Picture Readiness Game	Garrard Publishing Co.

3. Object Pictures--Color & Detail

a. Picture Dominoes	Creative Playthings
b. Match-Me	Benton Review Pub. Company
c. Picto-Lotto	F. A. Owen Pub. Company
d. Object Lotto	Constructive Playthings
e. Farm Lotto	Constructive Playthings
f. ABC Lotto	Constructive Playthings

4. Missing Parts

a. What's Missing Lotto	Constructive Playthings
b. Story-Cards--Tell What Part is Missing	Milton Bradley Company

5. Integration of Parts

a. Whole-Part-Whole Puzzles	Playskool, Inc.
b. Fruit & Animal Puzzles	Teaching Resources, Inc.
c. Shape & Size Puzzles	Creative Playthings
d. Animal Puzzles	Developmental Learning Materials

e. People Puzzles	Developmental Learning Materials
6. Spatial Relations	
a. Spatial Relation Picture Cards	Developmental Learning Materials
b. Fitzhugh Plus Program	Allied Education Council
7. Categorizing	
a. Food Series	Captioned Films Education Media Distribution Center
b. The Classification Game	Instructo Corporation
c. Go-Together Cards	Creative Playthings
d. Go-Together Lotto	Constructive Playthings
e. Association Picture Cards	Developmental Learning Materials
f. Motor Expressive Language Picture Cards	Developmental Learning Materials
g. Opposite Concepts	Instructo Corporation
h. Opposite Ideal Charts	Ideal School Supply
8. Picture Sequencing	
a. See-Quees	The Judy Company
b. Sequential Pictures	Developmental Learning Materials
9. Color	
a. Color Association Cards	Developmental Learning Materials
10. General Activities	

a.	Match and Check	Scott, Foresman and Co.
b.	Independent Activities, Level I.	The Continental Press, Inc.

III. OBJECTS AND SYMBOLS

A. Tactual

1.	Wood Lower Case Letters	Creative Playthings
2.	Magnetic Letters	Playskool, Inc.

B. Visual-Picture/Word Association

1.	Matchetts	The Judy Company
2.	Structural Reading Series	L. W. Singer Company, Inc.
3.	Word Matching Cards	Open Court Publishing Co.
4.	Picto-Lotto Cards	F. A. Owen Publishing Co.
5.	Picto-Word Flash Cards	Constructive Playthings
6.	Dolch Picture Word Cards	Garrard Publishing Co.
7.	Picture Word Builder	Milton Bradley Company
8.	My First Dictionary	Grosset & Dunlap, Inc.
9.	Families and Friends	Instructor Pub. Inc.
10.	Words and Action	Holt, Rinehart & Winston, Inc.
11.	Sort-a-Card Game	Milton Bradley Company
12.	Action Pictures & Name Pictures	Ideal School Supply
13.	The Game of Match Word	Benton Review Pub. Co.

14.	Ben-G Reading Readiness Puzzles	Creative Playthings, Inc.
15.	Match Games Sets, One and Two	Garrard Publishing Co.
16.	Object Lotto	Ed-U-Cards Mfg. Corp.

C. Words

1.	Basic Word Cards	Steck-Vaugh Company
2.	Basic Sight Vocabulary Cards	Garrard Publishing Co.
3.	Basic Sight Word Test	Garrard Publishing Co.
4.	Dolch Popper Words Sets 1 & 2	Garrard Publishing Co.
5.	Phonetic Quizmo	Milton Bradley Company
6.	Global Flash Cards	Milton Bradley Company
7.	Phonetic Drill Cards	Milton Bradley Company
8.	Pre-Primer Words--Flash Cards	Webster Division, McGraw-Hill

D. Phrases and Sentences

1.	Sight Phrase Cards	Garrard Publishing Co.
2.	Sentence Builders	Milton Bradley Company

E. Easy Reading

1.	Readers Digest Skill Builder	Reader's Digest Services, Inc.
2.	Surprise Stories, First Reader	Clear Type Publishing Committee
3.	The Silent Readers, Second Reader	Clear Type Publishing Committee
4.	I Wonder Why (Large Type Edition)	Stanwix House, Inc.
5.	My First Reading Unit, Part 2	Gel-Sten Supply Company, Inc.

6.	Cowboy Sam Series	Benefic Press
7.	Butternut Bill Series	Benefic Press
8.	Read and Play Book	Garrard Publishing Co.
9.	Easy-to-Read Books	Melmont Publishers
10.	Button Family Series	Benefic Press

F. Broad Application Items

1.	Frostig Pictures and Patterns Program	Follett Educational Corp.
2.	Perceptual Motor Teaching Materials	Teaching Resources
3.	Frostig Program for the Development of Visual-Perception, Teacher' Guide	Follett Educational Corp.
4.	Frostig Exercise and Worksheets	Follett Educational Corp.
5.	Harris Lateral Domi nance Kit	Follett Educational Corp.
6.	Detect: A Sensori-motor Approach to Visual Discrimination	Science Research Associates
7.	Erie Program/Perceptual Motor Development	Teaching Resources
8.	Fairbanks-Robinson Program	Teaching Resources
9.	Try: Experiences for Young Children	Noble & Noble Pub., Inc.
10.	Rhyming, Levels 1 & 2	The Continental Press, Inc.
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BOOKS AND REPORTS

Allport, F. H. Theories of perception and the concept of structure. New York: Wiley & Sons, 1955.

American Foundation for the Blind. A teacher education program for those who serve blind children and youth. New York: Author, 1961.

Ashcroft, S. C.; Halliday, C.; & Barraga, N. Study II: Effects of experimental teaching on the visual behavior of children educated as though they had no vision. Nashville, Tenn.: George Peabody College for Teachers, 1965. (Office of Education Grant No. 32-52-0121-1034)

Barraga, N. Increased visual behavior in low vision children. American Foundation for the Blind, Research Series, 1964, No. 13.

Bateman, B. D. Reading and psycholinguistic processes of partially seeing children. In Council for Exceptional Children, Inspection and introspection of special education. Washington, D. C.: Council for Exceptional Children, 1964, Pp. 74-82.

Bier, N. Correction of subnormal vision. London: Butterworth, 1960.

Douglas, A. G. A tachistoscopic study of the order of emergence in the process of perception. Psychological Monographs, 1947, 61.

Erikson, E. H. Childhood and society. New York: Norton, 1950.

Fonda, G. Management of the patient with subnormal vision, St. Louis, Mo.: Mosby, 1965.

Frostig, M. & Horne, D. Teacher's guide for the Frostig Program for the development of visual perception. Chicago: Follett, 1964.

Gesell, A.; Ilg, F.; & Bullis, G. Vision--its development in infant and child. New York: Harper, 1950.

Gibson, E. J. Principles of perceptual learning and development. New York: Appleton-Century Crofts, 1969.

Gibson, J. J. The senses considered as perceptual systems. Boston: Houghton-Mifflin, 1966.

Goins, J. T. Visual perceptual abilities and early reading progress. Chicago: University of Chicago Press, 1958. (Monograph No. 87)

Graham, M. D. Opening remarks. In L. L. Clark (Ed.), Proceedings of the symposium on research in blindness and severe visual impairment. New York: American Foundation for the Blind, 1964, Pp. 1-5.

Gregory, R. L. Eye and brain. New York: McGraw-Hill, 1966.

Hebb, D. O. The organization of behavior, New York: Wiley & Sons, 1949.

Herm, R. J. Limited vision and low vision aids--the ophthalmologist's view. In American Association of Instructors of the Blind, Forty-seventh biennial convention. Watertown, Mass.: American Association of Instructors of the Blind, 1964, Pp. 31-32.

Hirsch, M. J. & Wicks, R. E. (Eds.) Vision of children, an optometric symposium. Philadelphia, Pa.: Chilton, 1963. (Chapters 2, 4, 5, 8, 10, 14, 17)

Hoover, R. E. Toward a new definition of blindness. In American Association of Workers for the Blind, Blindness 1964, Washington, D. C.: American Association of Workers for the Blind, 1964, Pp. 99-106.

Hunt, J. M. Intelligence and experience. New York: Ronald, 1961.

Inhelder, B. & Piaget, J. The growth of logical thinking from childhood to adolescence. New York: Basic Books, 1958.

Jones, J. W. Blind children degree of vision mode of reading. Washington, D. C.: USGPO, 1961. (OE-35026, Bulletin 1961, No. 24)

Jones, J. W. & Collins, A. P. Educational programs for visually handicapped children. Washington, D. C.: USGPO, 1966 (OE-35070,Bulletin 1966, No.6)

Juurmaa, J. Ability structure and loss of vision. American Foundation for the Blind, Research Series, 1967, No. 18.

Kabrisky, M. A proposed model for visual information processing in the human brain. Urbana, Ill.: University of Illinois Press, 1966.

Lowenfeld, B. Psychological problems of children with impaired vision. In W. M. Cruickshank (Ed.), Psychology of exceptional children and youth. Englewood Cliff, N. J.: Prentice-Hall, 1955, Pp. 214-283.

Montessori, M. Dr. Montessori's own handbook. New York: Bentley, 1914.

Nolan, C. Y. Blind children; degree of vision, mode of reading: A 1963 replication. In Council for Exceptional Children, Inspection and introspection of special education. Washington, D. C.: Council for Exceptional Children, 1964, Pp. 86-94.

Orton, S. T. Reading, writing, and speech problems in children. New York: Norton, 1937.

Piaget, J. The origins of intelligence in children. New York: International Universities Press, 1952.

Pritchard, R. M. Mechanisms of seeing: Parameters of vision. In L. L. Clark (Ed.), Proceedings of the International Congress on Technology and Blindness. Vol. II. Panel II.--living systems. New York: American Foundation for the Blind, 1963. Pp. 37-43.

Robinson, H. M. & Huelman, C. B., Jr. Visual efficiency and progress in learning to read. Chicago: University of Chicago Press, 1953. Pp. 31-63. (Supplementary Education Monograph. No. 77)

Rosenzweig, M. R. Mechanism of seeing: The role of the brain. In L. L. Clark (Ed.), Proceedings of the International Congress on Technology and Blindness. Vol. II. Panel II.--living systems.

Segal, A. & Stone, F. H. The six-year old who began to see. In R. S. Eissler (Ed.), The psychoanalytic study of the child. Vol. 16. New York: International Universities Press, 1961, Pp. 481-509.

Smith, H. P. & Dechant, E. Psychology in teaching reading. Englewood Cliffs, N. J.: Prentice-Hall, 1961.

Vernon, M. D. A further study of visual perception. New York: Cambridge University Press, 1952.

Von Fieandt, K. The world of perception. Homewood, Ill.: Corsey, 1966.

Von Senden, M. Space and sight--the perception of space and shape in the congenitally blind before and after operation. Glencoe, Ill.: Free Press, 1932.

Wilman, C. W. Seeing and perceiving. New York: Pergamon, 1966.

Zahl, P. A. (Ed.) Blindness: Modern approaches to the unseen environment. New York: Hafner, 1962.

PERIODICALS

Ashcroft, S. C. A new era in education and a paradox in research for the visually limited. Exceptional Children, 1963, 29, 371-376.

Barraga, N. C. Learning efficiency in low vision. The Journal of the American Optometric Association, 1969, 40, 807-810.

Binder, A. A. statistical model for the process of visual recognition. Psychological Review, 1955, 62, 119-129.

Blair, H. L. & Martens, T. G. Refraction and visual physiology. Archives of Ophthalmology, 1962, 68, 107-139.

Bower, T. G. R. The visual world of infants. Scientific American, 1966, 215(6), 80-84,87,88,90,92.

Brod, N. Visual development and reading. American Journal of Optometry. 1969, 46, 96-102.

Brown, W. P. Conceptions of perceptual defense. British Journal of Psychology, 1961, (Monograph Supplement 35)

Bruner, J. S. On perceptual readiness. Psychological Review, 1957, 64, 123-152.

Cohen, A. S. A dynamic theory of vision. Journal of Developmental Reading, 1962, 6, 15-25.

Coopersmith, S. Relationship between self-esteem and sensory constancy. Journal of Abnormal Social Psychology, 1964, 68, 217-222.

Day, R. H. The physiological basis of form perception in the peripheral retina. Psychological Review, 1957, 64, 38-48.

Dearborn, W. F. Structural factors which condition special disability in reading. Proceedings of the American Association of Mental Deficiency, 1933-38, 266-283.

Dickinson, C. A. Experience and visual perception. American Journal of Psychology, 1926, 37, 330-344.

Djang, S. S. The role of past experience in the visual apprehension of masked forms. Journal of Experimental Psychology, 1937,20, 29-59.

Dorman, P. Sight restoration in a school for the blind. American Journal of Ophthalmology, 1935, 47, 187-221.

Drury, M. B. Progressive changes in non-foveal perception of line patterns. American Journal of Psycholcgy, 1933, 45, 628-646.

Eames, T. H. Visual handicaps to reading. Journal of Education, 1959, 141, 3-29.

Ehlers, H. Clinical testing of visual acuity. Archives of Ophthalmology, 1953,49, 431-434.

Enoch, J. M. Workshop on refractive anomalies of the eye. American Journal of Optometry, 1966, 43, 752-754.

Fantz, R. L. The origin of form perception. Scientific American, 1961, 204(5), 66-72.

Farris, L. P. Visual defects as factors influencing achievement in reading. Journal of Experimental Education, 1936, 5, 58-60.

Fehrer, E. V. An investigation of the learning of visually perceived forms. American Journal of Psychology, 1935, 47, 187-221.

Ffooks, O. Vision test for children: Use of symbols. British Journal of Ophthalmology, 1965, 49, 312-314.

Flax, N. Visual function in dyslexia. American Journal of Optometry, 1968, 45, 574-586.

Fonda, G. Report of five hundred patients examined for low vision. American Medical Association Archives of Opthalmology, 1956, 56, 171-175.

Fonda, G. Definition and classification of blindness with respect to ability to use residual vision. New Outlook for the Blind, 1961, 55, 169-172.

Fonda, G. Subnormal vision correction for aphakia, American Journal of Ophthalmology, 1963, 55, 247-255.

Forrest, E. B. Vision and Visual process. Education, 1962, 82, 299-301.

Forrest, E. B. A dynamic model of vision. American Journal of Optometry, 1966, 46, 37-44.

French, J. D. The reticular formation. Scientific American, 1957, 196(5), 54-60.

Friendenberg, H. L. Vision and its relationship to school achievement. The Optometric Weekly, 1965, 56, 29-33 (Nov. 4, 1965.)

Gartner, J. N. Large type reading materials for the visually handicapped. New Outlook for the Blind, 1968, 62, 233-239.

Gibson, E. J. Perceptual learning. Annual Review of Psychology, 1963, 14, 29-56.

Gibson, E. J. & Walk, R. D. The visual cliff. Scientific American, 1960, 202(4), 64-71.

Gibson, J. J. What is form? Psychological Review, 1951, 58, 403-412.

Gnade, M. Low vision services. Sight-Saving Review, 1965, 35, 216-219.

Goldstein, H. So that all may see. New Outlook for the Blind, 1964, 58, 280-284.

Gregory, R. L. Visual illusions. Scientific American, 1968, 219(5), 66-76.

Hatfield, E. M. A year's record of pre-school vision screening. Sight-Saving Review, 1966, 36, 18-22.

Hendrickson, H. H. The developmental vision sequence. Journal of the American Optometric Association, 1962, 22, 1-4.

Henle, M. An experimental investigation of past experience as a determinant of visual perception. Journal of Experimental Psychology, 1942, 30, 1-22.

Hildreth, H. R. The effect of visual training on existing myopia. American Journal of Ophthalmology, 1947, 30, 1573-1576.

Hoover, R. E. Visual efficiency as a criterion of service needs. American Foundation for the Blind, Research Bulletin, 1963, No. 3, 116-119.

Jones, J. W. Problems in defining and classifying blindness. New Outlook for the Blind, 1962, 56, 123-129.

Karnes, M. B. & Wollersheim, J. P. An intensive differential diagnosis of partially seeing children to determine the implications of education. Exceptional Children, 1963, 30, 17-25.

Koetting, R. A. A broader base for the management of subnormal vision. American Journal of Optometry, 1967, 44, 381-388.

Kurzhals, I. W. Reading made meaningful through a readiness for learning program. International Journal for the Education of the Blind, 1966, 15, 107-111.

Lairy, G. C. & Netchine, S. The electroencephalogram in partially sighted children related to clinical and psychological data. American Foundation for the Blind, Research Bulletin, 1962, No. 2, 38-56.

Lancaster, J. E. The learning process in orthoptics. American Journal of Ophthalmology, 1949, 32, 1577-1585.

Lancaster, W. B. Present status of eye exercises for improvement of visual function. Archives of Ophthalmology, 1944, 32, 167-172.

Law, F. The problem of the visually defective infant. Transcription of the Ophthalmological Society of the United Kingdom, 1960, 80, 3.

Lebensohn, J. E. Scientific and practical considerations involved in the near-vision test with presentation of practical and informative near vision charts. American Journal of Ophthalmology, 1936, 19, 110-117.

Lemkau, P. V. The influence of handicapping conditions in child development. Children, 1961, 8, 43-47.

London, I. D. A Russian report on the postoperative newly seeing. American Journal of Psychology, 1960, 73, 478-482.

Lowenfeld, B. The visually handicapped. Review of Educational Research, 1963, 33, 38-48.

Margach, C. B. Spatial perception in low-visioned persons. Optometric Weekly, 1969, Jan.

McKee, G. A. The role of the optometrist in the development of perceptual and visiomotor skills in children. American Journal of Optometry, 1967, 44 , 297-310.

Neisser, U. The processes of vision. Scientific American, 1968, 219(3), 204-208, 210, 212, 214.

Postman, L. Visual perception. Psychological Review, 1955, 62, 438-451.

Pratt, C. The role of past experience in visual perception. Journal of Psychology, 1950, 30, 85-107.

Prince, J. H. Special print for subnormal vision. American Journal of Ophthalmology, 1959, 48, 122-124.

Renshaw, S. The visual perception and reproduction of forms by tachistoscopic methods. Journal of Psychology, 1945, 20, 217-232.

Riesen, A. Effects of stimulus deprivation on the development and atrophy of the visual sensory system. American Journal of Orthopsychiatry, 1960, 30, 23-26.

Riesen, A. H. Vision. American Review of Psychology, 1954, 5, 57-88.

Riesen, A. H.; Chow, K. L.; Semmes, J., & Nissen, H. W. Chimpanzee vision after four conditions of light deprivation. American Psychologist, 1951, 6, 282.

Rock, I. & Harris, C. S. Vision and touch. Scientific American, 1967, 216(5), 96-104.

Sells, S. B. & Fixott, R. S. Evaluation of research on effects of visual training on visual functions. American Journal of Ophthalmology, 1957, 44, 230-235.

Sibert, K. N. The legally blind child with useful residual vision. International Journal for the Education of the Blind, 1966, 16, 33-44.

Sloan, L. L. & Brown, D. J. Relative merits of headborne, hand and stand magnifiers. American Journal of Ophthalmology, 1964, 58, 594-604.

Sloan, L. L. & Habel, A. Reading aids for the partially blind. American Journal of Ophthalmology, 1956, 42, 863-872.

Sloane, A. E. The value of low vision aids. Sight-Saving Review, 1961, 31, 144-160.

Spaeth, E. Estimation of loss of visual efficiency. Archives of Ophthalmology, 1955, 54, 462-468.

Taubenhaus, L. J. & Jackson, A. A. Vision screening of pre-school children. Sight-Saving Review, 1965, 35, 100-104.

Wallach, H. The perception of motion. Scientific American, 1959, 201(1), 56-60.

Weiss, S. Optical aids for the partially sighted. American Journal of Ophthalmology, 1963, 55, 255-261.

Witkin, H. A. The perception of the upright. Scientific American, 1959, 200(2), 50-56.

Woodruff, A. B. & Wickens, D. D. The effect of sense restriction of visual experience on form perception in the white rat. American Psychologist, 1951, 6, 281.

Zimmerman, A. An appraisal of partial vision: Its dual nature and problems. New Outlook for the Blind, 1965, 59, 153-156.

Directions for Administration of

VISUAL EFFICIENCY SCALE

GENERAL INSTRUCTIONS:

This scale should be referred as a game to play if the children are young. If children are ten years of age or older they may be instructed that it is a scale to show how well they are able to see certain things.

For the first assessment, it is probably more appropriate to work with one child at a time, although two or three children may be handled as a group in reassessment periods.

The person administering the scale should be sure that each child understands the instructions clearly for every item (repeat as many times as is necessary). As much time as seems reasonable should be permitted for the child to look (teacher may use her own judgment). It is particularly important that the teacher check to see that each child has his finger in the correct row, or to be sure that he is looking at the proper row, and that he looks at all the items in that row before making his choice.

If the child is not accustomed to holding and marking with a pencil, it would be better to let him practice on some sheets prepared by the teacher before he begins the scale. When a child has difficulty keeping his place, a cover sheet may be used to expose one item or one row at a time. Children should

be permitted to hold the page as close as they desire.

No indication should be given the child as to whether or not his choice is correct. If he/she inquires; just say "that's fine" or something similar. The scale is designed so that no low vision child should be able to succeed on all items, and he needs to understand that he is not expected to respond to any items he feels he is unable to see. The child should be encouraged to attempt all items, but may omit items which he/she insists are too small to see or he cannot tell the difference. If it seems more appropriate to break the assessment procedure into two or more sessions, the teacher may stop at the end of any section and begin with the next section at a future time.

The scale is designed to assess functioning of visual behaviors and responses to items of increasing complexity in size, detail, and interpretation. The first section (Items 1 through 12) related to the discrimination and matching of geometric form, object contour, light-dark intensity, and size and position in space. Section two (Items 13 through 24) requires the discrimination and matching of figure size, object and abstract figure detail, position of figures in space, and image constancy of outlines, pattern details, and objects. The third section (Items 25 through 36) presents items for visual closure of figures, spatial perspective of figure outlines, and visual discrimination and matching of object and abstract

figure details. Section four (Items 37 through 48) requires the discrimination of size, position, sequence, and relationship of letter and word symbols and groups of symbols. At no time is the child expected to recognize or call by name the letters or to be able to read the words or groups of words.

SPECIFIC INSTRUCTIONS:

Distribute the scale to the children with a red pencil and say, "WE ARE GOING TO PLAY A NEW GAME OR WE ARE GOING TO LOOK AT SOME THINGS TO SEE HOW WELL YOU CAN SEE THEM. I WANT TO FIND OUT HOW MANY PICTURES AND DRAWINGS YOU CAN SEE BY LOOKING AT THEM WITH YOUR EYES. LISTEN CAREFULLY TO EVERYTHING I SAY, AND MARK ONLY WHEN I TELL YOU." Always refer to the items as forms, figures, pictures, letters, or words or groups of words, never to any item by its particular name. No assistance in the choice or the marking of any items should be given.

Should a child indicate that he is unable to see or understand an item, encourage him to go to the next item and to try every one. However, teachers should exercise their own judgment as to when to omit items or to terminate the administration.

Directions for Item by Item Administration

1. Say, "PUT YOUR FINGER BY THE FIRST ROW. LOOK AT THE FORM IN THE BOX, THEN MARK THE ONE IN THE ROW THAT LOOKS JUST LIKE (OR EXACTLY LIKE) THE ONE IN THE BOX."
2. Say, "MOVE YOUR FINGER TO THE NEXT ROW, AND MARK THE FORM THAT IS DIFFERENT (OR DOES NOT LOOK LIKE THE OTHERS)."
3. Say, "MOVE YOUR FINGER TO THE NEXT ROW. LOOK AT THE FORM IN THE BOX, THEN MARK THE ONE IN THE ROW THAT LOOKS JUST LIKE (OR EXACTLY LIKE) THE ONE IN THE BOX."
4. Say, "MOVE YOUR FINGER TO THE NEXT ROW AND PUT A MARK ON THE CROSS."
5. Say, "LOOK AT THE FORM IN THE BOX, THEN MARK THE ONE IN THE ROW THAT LOOKS JUST LIKE (OR EXACTLY LIKE) THE ONE IN THE BOX."
6. Same as No. 5

Say, "TURN THE PAGE AND PUT YOUR FINGER BY THE FIRST ROW."

7, 8, 9. Say, "LOOK AT THE FORM IN THE BOX, THEN MARK THE ONE IN THE ROW THAT LOOKS JUST LIKE (OR EXACTLY LIKE) THE ONE IN THE BOX."

10. Say, "LOOK AT THE FIGURE IN THE BOX, THEN MARK THE ONE IN THE ROW THAT LOOKS JUST LIKE THE ONE IN THE BOX."
11. Same as No. 10.

12. Say, "LOOK AT THE FIGURE IN THE BOX AND AT THE OPENING IN IT. MARK THE ONE IN THE ROW THAT HAS AN OPENING JUST LIKE THE ONE IN THE BOX."

Say, "TURN THE PAGE AND PUT YOUR FINGER IN THE FIRST ROW."

13. Say, "LOOK AT THE FIGURE IN THE BOX AND AT THE OPENING IN IT. MARK THE ONE IN THE ROW THAT HAS AN OPENING IN EXACTLY THE SAME PLACE."

14. Same as No. 13.

15, 16, 17, 18. Say, "LOOK AT THE FIGURE IN THE BOX, THEN MARK THE ONE IN THE ROW THAT LOOKS EXACTLY LIKE IT."

Say, "TURN THE PAGE AND PUT YOUR FINGER BY THE FIRST ROW."

19, 20. Say, "LOOK AT THE FIGURE IN THE BOX THEN MARK THE ONE IN THE ROW THAT LOOKS EXACTLY LIKE IT."

21. Say, "LOOK AT THE LINES IN THE FIRST BOX, THEN MARK THE ONES IN THE ROW THAT ARE EXACTLY LIKE THEM."

22. Say, "LOOK AT THE FIGURE IN THE BOX, THEN MARK THE PARTS THAT WILL LOOK EXACTLY LIKE THE ONE IN THE BOX WHEN THEY ARE PUT TOGETHER."

23. Say, "LOOK AT THE FIGURE PARTS IN THE FIRST BOX, THEN MARK THE ONE IN THE ROW THESE WOULD MAKE WHEN JOINED TOGETHER."

24. Say, "LOOK AT THE PICTURE IN THE BOX, THEN MAKE THE ONE IN THE ROW THAT LOOKS MOST LIKE IT."

Say, "TURN THE PAGE AND PUT YOUR FINGER BY THE FIRST ROW."

25. Say, "THE PIECES IN THE FIRST BOX MAY BE PUT TOGETHER TO FORM AN OBJECT. MARK THE OBJECT IN THE ROW THEY WOULD MAKE."
26. Say, "LOOK AT THE PIECE OF A FIGURE IN THE BOX, THEN MARK THE PIECE IN THE ROW THAT WILL FIT WITH IT TO MAKE A WHOLE FIGURE.
27. Say, "LOOK AT THE FIGURE IN THE BOX, THEN MARK THE ONE IN THE ROW THAT IS THE SAME FIGURE."
28. Say, "LOOK AT ALL THE BLOCKS, THEN MARK THE ONE THAT IS NOT THE SAME KIND OF BLOCK."
29. Say, "MARK THE FIGURE THAT IS A DIFFERENT SHAPE FROM THE OTHERS."
30. Say, "LOOK AT THE FIGURE IN THE BOX, THEN MARK THE ONE IN THE ROW THAT IS EXACTLY LIKE IT."

Say, "TURN THE PAGE AND PUT YOUR FINGER BY THE FIRST ROW."

31. Say, "LOOK AT THE OBJECT IN THE BOX, THEN MARK THE OBJECT IN THE ROW THAT IS EXACTLY LIKE IT."
32. Say, "LOOK AT THE OBJECT IN THE BOX, THEN MARK THE ONE IN THE PICTURE THAT IS EXACTLY LIKE IT."
33. Say, "LOOK AT THE PART OF A FIGURE IN THE BOX, THEN MARK THE FIGURE IN THE ROW THAT HAS A PART WHICH LOOKS JUST LIKE THE PART IN THE BOX."
34. Same as No. 33.
35. Say, "LOOK AT THE FIGURE IN THE BOX, THEN MARK THE ONE IN THE ROW THAT IS EXACTLY LIKE THE ONE IN THE BOX."

36. Say, "LOOK AT THE LETTER IN THE BOX, THEN MARK THE ONE IN THE ROW THAT IS THE VERY SAME LETTER."

Say, "TURN THE PAGE AND PUT YOUR FINGER BY THE FIRST ROW."

37. Say, "LOOK AT THE LETTER IN THE BOX, THEN MARK THE ONE IN THE ROW THAT IS EXACTLY LIKE IT."
38. Say, "LOOK AT THE GROUP OF LETTERS IN THE BOX, THEN MARK THE GROUP OF LETTERS IN THE ROW THAT LOOK JUST LIKE THEM."
39. Say, "MARK THE GROUP OF LETTERS THAT IS NOT LIKE THE OTHERS."
40. Say, "LOOK AT THE WORD IN THE BOX, THEN MARK THE ONE IN THE ROW THAT LOOKS EXACTLY LIKE IT."
41. Say, "LOOK AT THE WORD IN THE BOX, THEN MARK THE ONE IN THE ROW THAT LOOKS MOST LIKE IT."
42. Same as No. 41.

Say, "TURN THE PAGE AND PUT YOUR FINGER BY THE FIRST ROW."

43. Say, "LOOK AT THE OUTLINE IN THE BOX, THEN MARK THE GROUP OF LETTERS IN THE ROW THAT WOULD FIT IN THAT OUTLINE."
44. Say, "LOOK AT THE WORD IN THE BOX, THEN MARK THE WORD IN THE ROW THAT LOOKS EXACTLY LIKE THE ONE IN THE BOX."
45. Say, "MARK THE WORD THAT DOES NOT LOOK LIKE THE OTHERS."
46. Say, "LOOK AT THE WORD IN THE BOX. FIND THAT SAME WORD IN ONE OF THE LONGER WORDS IN THE ROW AND PUT A LINE THROUGH IT."

47. Say, "LOOK AT THE GROUP OF WORDS IN THE BOX, THEN DRAW A LINE THROUGH THE GROUP OF WORDS THAT LOOKS MOST LIKE THOSE IN THE BOX."

48. Say, "DRAW A LINE THROUGH THE GROUP OF WORDS THAT IS NOT LIKE THE OTHERS."